INSTALLATION AND OPERATION INSTRUCTION
WREP-4C RADIO FREQUENCY (RF) REPEATER
Orion Energy Systems

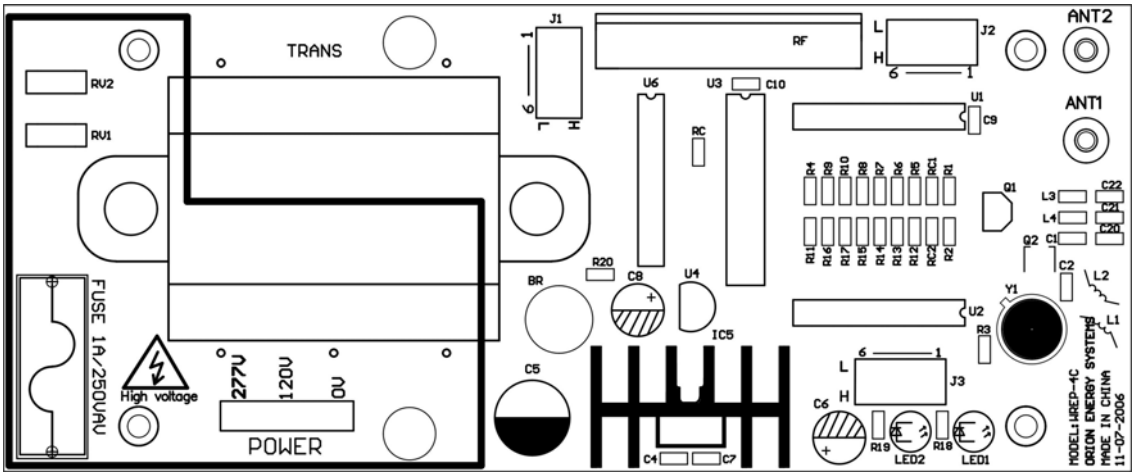
WARNING
Read this manual completely before the wiring, installation and operation of this device.
This device is for in-door use only.
Danger with high voltage 120 VAC or 208 to 277 VAC.
There are risks of electrical shock if this device is not wired or installed properly.
This device must be installed by a qualified personnel.

DESCRIPTION
WREP-4C is a radio frequency repeater which receives the radio frequency signal from either an Orion Energy Systems WTRA-4C transmitter or another WREP-4C repeater. After the repeater receives the signal, it re-transmits the signal to Orion Energy Systems WREC-2R receivers, pauses, transmit another signal to the next repeater down the link which enables the down link repeater to further relay the signal.

INSTALLATION
AC power supply connection:
Warning: Turn power off before you connect this device to your power supply.
Make sure your power supply voltage matches the transmitter power supply requirements: 120 VAC or 208 to 277 VAC.
For power supply 120 VAC, connect the white wire to neutral and the black wire to the line, leave the red wire alone and **cover its end with wire nut.** Failure to terminate the unused wire presents a shock hazard.
For 208 to 277, connect the white wire to either the neutral or line and connect the red wire to the other line, leave the black wire alone and **cover its end with wire nut.** Failure to terminate the unused wire presents a shock hazard.

Coding:
There are three (3) jumper sockets J1, J2 and J3 on the repeater printed circuit board as shown in FIGURE 1 WREP-4C REPEATER PCB BOARD LAYOUT.

FIGURE 1 WREP-4C RF TRANSMITTER PCB BOARD LAYOUT



J1 is for receiving address, J2 is for control address and J3 is for repeating address. Each of the jumper sockets needs to be coded properly in order for the repeater to work properly.
J1, the receiving address, which needs to be coded either exactly the same as the transmitter if it is the first repeater on the repeating link or exactly the same as the repeating address on the repeater right ahead of it on the repeating link. For examples, if the repeater is the first repeater on the repeating link and Orion Energy System WTRA-4C transmitter address is coded with jumpers between pin 4H and its central pin, and 1L and its central pin, you need to install the jumpers at the same position on the repeater's J1 jumper socket. For transmitter address coding details, please refer to
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If the repeater is not the first one on the repeating link, J1, the receiving address on this repeater, needs to be coded exactly the same as the J3 repeating address on the repeater right ahead of it on the repeating link. Please refer to the following paragraph for repeating address coding.

J2, the control address, needs to be coded exactly the same as Orion Energy Systems WREC-2R receiver address. For receiver address coding details, please refer to
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J3, the repeating address, can be coded as you choose, but the receiving address on the repeater right next to it down the repeating link needs to be the same. For examples you can install a jumper between pin 1H and its central pin and leave the rest of the pins without any jumpers, it forms a repeating address. Different jumper configurations form different addresses including no jumper at all.

IMPORTANT: The receiving, control and repeating addresses on one repeater must be different. The control address on all the repeaters must be different from any receiving or repeating addresses on the repeating chain. When a repeater is used, the receiver address can not the same as the transmitter address. If above rules are followed, there will be no ping pong effect when the signal is relayed.
Here is how the repeating link works: The transmitter sends out the initial control signal to the first repeater, the first repeater transmits the control signal to the receivers after it receives the control signal from the transmitter, then it pauses and send out a repeating signal down the link to tell the next repeater to relay the signal. This is a chain link. When one of the repeaters stops working, the signal can only be relayed up to this repeater. The signal relaying down the link starting from this repeater will stop and all the repeater after this one will not work.

OPERATION
Warning: **Make sure your power supply voltage matches the repeater power supply requirements: 120 VAC or 208 to 277 VAC. Otherwise there is electrical shock hazard.**
After the repeater power supply is properly wired and its voltage matches the line power voltage, turn the repeater power on. The repeater will work automatically. The repeater will remain in a stand-by mode until it successfully receives a signal, then it will send out the control signal and repeating signal automatically.

TROUBLESHOOTING
<u>The signal can not be relayed:</u>

- No power to the repeater. Check if the light LED 2 for the power supply is on. If it is not, no power to the repeater.
- Watch the signal relay light LED 1. When the repeater works, the signal relay light LED 1 flashes twice in a very short period time. If it does not, the repeater does not receive the repeating signal. Check to make sure the repeating address from the upper link repeater matches the receiving address on this repeater. If it does match, then proceed to check the repeater on the upper link to make sure it is working properly.
- The repeaters' addresses are not coded properly. Follow all the rules in this instruction under **INSTALLATION**, especially those under **IMPORTANT.**

<u>The receiver can not be controlled by the repeater:</u>

- Make sure the repeater works properly. See above for details.
- Make sure the control address on the repeater matches the receivers' address.
- Make sure the receiver works. For details, please refer to

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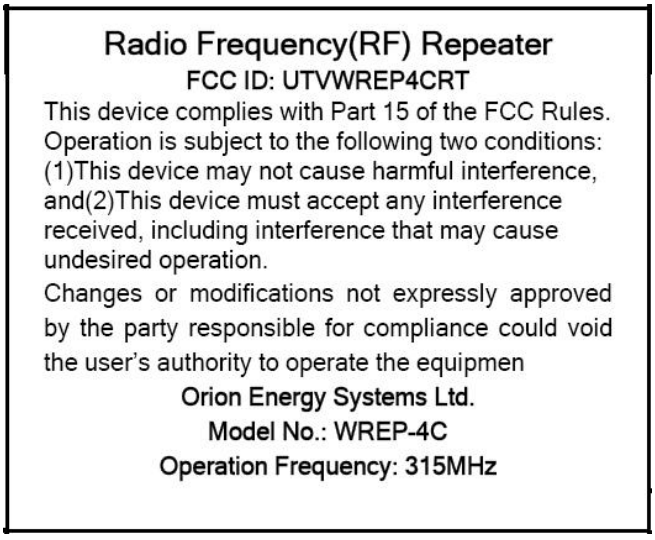
- The receiver is too far away from the repeater. Please refer to TECHNICAL DATA for details. Add more repeaters so that the receiver can receive the signal.
- There are large obstacles between the repeater and the receivers. Use more repeaters to go around the large obstacles.

TECHNICAL DATA

Power Supply: 120 VAC or 208 to 277 VAC.
Antenna: External for receiving. Internal for transmission.
Frequency: 315 MHz
Transmission Power: ≤6 mV/m at 3 meter
Transmission range: 300 meter at free field
Modulation: ASK
Sensitivity: -105 db
Number of data Transmitted: four (4) pair (4 off signals and 4 on signals)
Operation Temperature: -20 ^{o}C to 60 ^{o}C (-4 ^{o}F to 140 ^{o}F)
Certification: FCC compliance

This device complies with Part 15 of the FCC Rules. If this device is operated in compliance with the following requirements, it can be operated without notification and free of charge in the area of the United States of America.



Warning: Changes or modifications made to this device not expressly approved by Orion Energy Systems may void the FCC authorization to operate this device.